APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,057	03/26/2004	Thomas W. Sederberg	22477	9540

20551	7590	11/01/2006

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EXAMINER
PAPPAS, PETER

ART UNIT	PAPER NUMBER
2628	

DATE MAILED: 11/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/811,057	SEDERBERG, THOMAS W.
	Examiner	Art Unit	
	Peter-Anthony Pappas	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>25 August 2006</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-7,9,11-17 and 19-22</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-7,9,11-17 and 19-22</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>26 March 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☒ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claims 12-15 are objected to because of the following informalities: said

respective claim language discloses a cubic spline and should instead disclose a bi-

cubic spline. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3.   Claims 1-7, 9, 12-17 and 19-22 are rejected under 35 U.S.C. 101 because the

claimed invention is directed to non-statutory subject matter. While abstract ideas,

natural phenomena and laws of nature are not eligible for patenting, methods and

products employing abstract ideas, natural phenomena, and laws of nature to perform a

real-world function may well be. For claims including such excluded subject matter to

be eligible, the claim must be for a practical application of the abstract idea, law of

nature, or natural phenomenon. Diehr, 450 U.S. at 187, 209 USPQ at 8 ("application of

a law of nature or mathematical formula to a known structure or process may well be

deserving of patent protection."); Benson, 409 U.S. at 71, 175 USPQ at 676 (rejecting

formula claim because it "has no substantial practical application"). To satisfy section

101 requirements, the claim must be for a practical application of the § 101 judicial

exception, which can be identified in various ways: the claimed invention "transforms"

an article or physical object to a different state or thing; the claimed invention otherwise

produces a useful, concrete and tangible result.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 3, 4, 7, 12, 19, 20 and 22 are rejected under 35 U.S.C. 102(b) as being

anticipated by Bakenov (T-Splines: Tensor Product B-Spline Surfaces with T-Junctions).

6.   In regards to claim 3 Bakenov teaches a method for locally refining (p. 16, § 2.6,

¶ 2) a control mesh of a bi-cubic spline surface in a computing environment, comprising

the steps of: defining a control mesh having a substantially rectangular structure;

inserting a single control point into a pre-image of the control mesh to form a T-junction

(p. 53-59, specifically Fig. 4.8, § 4.3; p. 69-70, Figs. 5.2-5.5, § 5.2) in any proximity and

parameter direction to any other pre-exiting T-junctions in the control mesh (p. 54, Fig.

4.8); and computing the Cartesian coordinates of the control points and of the

neighboring control points (p. 57-58, Step 5, § 4.3) such that the bi-cubic spline surface

is not geometrically altered (Abstract, ¶ 1; p. 13, § 2.3; p. 53-59, § 4.3; p. 65-73, § 5.2).

Bakenov teaches that in the knot insertion process, a knot is added to the knot vector of

a given B-spline. This results in an additional control point and a modification of a few

existing control points. The end result is a curve defined by a larger number of control

points, but which defines exactly the same curve as before knot insertion (p. 16, § 2.6).

It is noted that the respective claim language comprises open-ended claim

language (i.e. "...comprising..." – line 2) and thus "...inserting a single control point..." is

not considered to limit said claim to require that only one control point be inserted into said control mesh.

7.   In regards to claim 4 Bakenov teaches splitting basis functions (p. 21-25, § 2.8.1) which have fewer knots than are called for by the control mesh (p. 68, step 2, § 5.2); and adding control points to the control mesh in locations where basis functions have more knots than are called for by the control mesh (p. 68, step 3, § 5.2).

8.   In regards to claim 7: see p. 65-73, § 5.2, specifically Figs. 5.6-5.10. It is noted that the language "...having control meshes that are allowed to contain T-junctions..." is not considered to limit said claim to require that T-junctions be present in said control mesh.

9.   In regards to claim 12 Bakenov teaches defining bi-cubic spline surfaces that provides local refinement to control meshes, using T-junctions in either parameter directions, in a computing environment (p. 53-59, Fig. 4.8, § 4.3) in any proximity and parameter direction to any other pre-exiting T-junctions in the control mesh (p. 54, Fig. 4.8), comprising the steps of: specifying knot intervals associated with the spline control mesh; imposing a local knot coordinate system based on the knot interval (p. 18-21, § 2.8); inferring local knot vectors for control points in order to produce basis functions for the control points (p. 5-6, § 2.1); and inserting a single control point into the control mesh without altering the bi-cubic spline surface (p. 16, ¶ 2, § 2.6). It is noted that it is considered that at least one control point must be inserted or removed from a mesh to form a T-junction (p. 3, § 1.1, Fig. 1.2). Bakenov further teaches permitting partial rows of control points terminating in a T-junction (p. 54, § 4.3).

10.   In regards to claims 19 and 20: see p. 29, § 2.9.1; p. 65-73, § 5.2.

11.   In regards to claim 22: see p. 3, § 1.1; p. 58-59, § 4.3.

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was
> made.

13.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bakenov

(T-Splines: Tensor Product B-Spline Surfaces with T-Junctions), as applied to claims 3,

4, 7, 12, 19, 20 and 22, in view of Adobe Developer Association (Smooth Shading),

herein referred to as Adobe.

14.   In regards to claim 15 Bakenov fails to explicitly teach the step of applying

shading to the cubic spine mesh that can be viewed by an end user. Adobe teaches

that smooth shading can be used to accurately describe image information which is

displayed via a screen (p. 13; p. 16). Adobe teaches that the ShadingType 7 shading

method is almost identical to ShadingType 6, except that instead of using a bicubic

Coons patch defined by twelve control points, a bicubic tensor product patch defined by

sixteen control points is used. The extra control points allow for more control of the

color interpolation across the patch (p. 47; p. 55). It is noted that said image information

displayed via a screen is considered to be viewed by a user.

It would have been obvious to one skilled in the art, at the time of the Applicant's invention, to incorporate the teachings of Adobe into method taught by Bakenov, because such incorporation would provide a means by which to more accurately present graphical image information for display.

Response to Arguments

15.   The prior 112 35 U.S.C. 112 second paragraph rejection as been withdrawn in lieu of Applicant's remarks.

16.   Applicant's remarks have been fully considered, but are not deemed persuasive.

Conclusion

17.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter-Anthony Pappas whose telephone number is 571-272-7646. The examiner can normally be reached on M-F 9:00am-5:30pm.
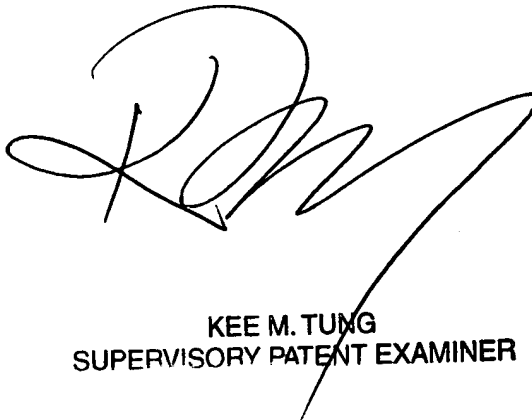
If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Peter-Anthony Pappas
Examiner
Art Unit 2628

PP

KEE M. TUNG
SUPERVISORY PATENT EXAMINER